DOCUMENT RESUME

ED 470 094 IR 021 532

AUTHOR	Lee, Cheng-Yuan; Witta, E. Lea
TITLE	Online Students' Perceived Self-Efficacy: Does It Change?
PUB DATE	2001-11-00
NOTE	8p.; In: Annual Proceedings of Selected Research and Development [and] Practice Papers Presented at the National Convention of the Association for Educational Communications and Technology (24th, Atlanta, GA, November 8-12, 2001). Volumes 1-2; see IR 021 504.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	Course Content; *Distance Education; Educational Technology; Higher Education; Online Systems; Predictor Variables; *Self Efficacy; *Student Attitudes; Student Reaction

ABSTRACT

Two types of self-efficacy were investigated in this study: self-efficacy for course content and self-efficacy for online learning technologies. Specifically, the study examined how these two types of self-efficacy change throughout a semester. Secondly, it examined whether students' self-efficacy is predicative of their satisfaction and course performance. Three hypotheses were tested: (1) self-efficacy for both course content and online learning technologies change across a semester; (2) self-efficacy is predictive of student satisfaction with course; (3) self-efficacy is predictive of course performance. Participants were undergraduate students who enrolled in an online course at the University of Central Florida. In an attempt to longitudinally gauge the student's continuing self-efficacy, a self-efficacy survey for the course content and online learning technologies was administered every three weeks (Four times across a semester). At the end of the semester, students' perceived degree of satisfaction with the online course was measured and students' final course scores were obtained from the instructor. Results indicated that both self-efficacy for course content and self-efficacy for online technologies increased during the semester. In addition, while initial self-efficacy for course content was a significant predicator of students' satisfaction with the course, neither self-efficacy with the course content nor self-efficacy with online technologies was a significant predictor of performance. (Contains 39 references.) (Author/AEF)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 470 094

Online Students' Perceived Self-Efficacy: Does It Change?

By: Lee, Cheng-Yuan; Witta, E. Lea

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

P Harris

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

IR021532

2

BEST COPY AVAILABLE

Online Students' Perceived Self-Efficacy: Does It Change?

Cheng-Yuan (Corey) Lee
E. Lea Witta
University of Central Florida

Abstract

Two types of self-efficacy were investigated in this study: self-efficacy for course content and self-efficacy for online learning technologies. Specifically, we examined how these two types of self-efficacy change throughout a semester. Secondly, we examined whether students' self-efficacy is predictive of their satisfaction and course performance. Three hypotheses were tested: (a) self-efficacy for both course content and online learning technologies change across a semester; (b) self-efficacy is predictive of student satisfaction with course; (c) self-efficacy is predictive of course performance. Participants were undergraduate students who enrolled in an online course at the University of Central Florida. In an attempt to longitudinally gauge the student's continuing self-efficacy, a self-efficacy survey for the course content and online learning technologies was administered every three weeks (four times across a semester). At the end of the semester, students' perceived degree of satisfaction with the online course was measured and students' final course scores were obtained from the instructor. Results indicated that both self-efficacy for course content and self-efficacy for online technologies increased during the semester. In addition, while initial self-efficacy for course content was a significant predictor ($p<0.05$) of students' satisfaction with the course, neither self-efficacy with course content nor self-efficacy with online technologies was significant predictors of performance.

Introduction

The development of telecommunications technology since the early 90's has led to an explosive growth in the World-Wide Web (WWW). According to the Ipsos-Reid (2001) and CyberAtlas's (2001) reports, as many as 400 million people are already on the Internet, and nearly one billion people (about 15% of the world's population) will be connected to the Internet by 2005. Along with the astonishing growth of Internet usage, an increasing number of educational institutions are now offering their courses via the Web, namely Web-based (online) education. International WHERE + HOW (2001) lists more than 55,000 online courses that are provided by higher educational institutions and training corporations. The benefits of online education are two-fold: individuals are given an opportunity to enhance their professional development and expand career opportunities while juggling responsibilities between family and work, and online education provides educational institutions a means to reach a greater student population resulting in an increase in revenue.

Although online education is gaining tremendous popularity, it is accompanied with a serious problem: a high attrition rate. Students enrolled in distance courses are more likely to drop out than their traditional counterparts. According to Moore and Kearsley (1996), the attrition rate in distance education courses is between 30 and 50%, which is much higher than in traditional course settings. This results in some negative implications for students, as well as for institutions. For students, the negative effects of dropout include loss of opportunity for personal and career advancement, lowered self-esteem, and increased likelihood of future disappointment (Atman, Egan, Sebastian, Welch, & Page, 1991). For an institution, high attrition rate results in considerable financial loss (Keegan, 1986).

Background of the Study

A great deal of research has been conducted to investigate factors that lead to student attrition (Baynton, 1992; Coggins, 1988; Dille & Mezack, 1991; Eisenberg & Dowsett, 1990; Fjortoft, 1995; Frew & Weber, 1995; Garland, 1993; Keller, 1999; Miltiadou, 2000; Parker, 1995; Pugliese, 1994; Zajkowski, 1993). Among those factors identified, motivation is often considered a strong predictor of success in a distance course (Baynton, 1992; Coggins, 1988; Dille & Mezack, 1991; Fjortoft, 1995; Garland, 1993; Keller, 1999; Miltiadou, 2000; Zajkowski, 1993). Keller (1999) directly attributes attrition to a motivational problem.

While learning takes place at a distance, student motivation becomes particularly critical because distance learning places the responsibility of learning on the student much more so than does traditional learning. Cropley and Kahl (1983) stated:

> "distance learners are thrown back upon their own motivational resources to a greater extent than is the case with face-to-face learners, since many of the factors which provide external motivation are absent or present only in an indirect form in distance education. Internal motivation is a highly desirable thing in face-to-face education, but is a necessary precondition in distance education" (p.32).

In numerous studies of learning motivation, self-efficacy has been identified as a significant predictor of student motivation (Bandura, 1997). Specifically, self-efficacy is predictive of academic performance and course satisfaction in traditional face-to-face classrooms (Bandura, 1997) and online courses (Miltiadou, 2000; Wang & Newlin, in press). Furthermore, an individual's self-efficacy has a significant impact on his or her (a) actual performance (Locke, Frederick, Lee, & Bobko, 1984; Schunk, 1981); (b) emotions (Bandura, Adams, & Beyer, 1977; Stumpf, Brief, & Hartman, 1987); (c) choices of behavior (Betz &

BEST COPY AVAILABLE

Hackett, 1981); and (d) amount of effort and perseverance expended on an activity (Brown & Inouye, 1978). Self-efficacy, as defined by Bandura (1997) is, "the beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). According to Bandura (1997), four major sources contribute to an individual's self-efficacy: enactive experiences, vicarious experiences, verbal persuasion, and physiological indexes. Bandura (1982) reviewed a variety of self-efficacy studies in various settings, and found that self-efficacy theory has significant explanatory potential. He found that perceived self-efficacy accounts for a wide variety of people's behaviors, including changes in coping behavior produced by different modes of influence, levels of physiological stress reactions, self-regulation, achievement strivings, growth of intrinsic interest, and choice of career pursuits. Similarly, Multon et al. (1991), in a meta-analytic review of thirty-nine educational studies, found that self-efficacy beliefs were positively related to student persistence and academic performance across a variety of subject areas, experimental designs, and grade-level. Bandura (1997) also found that self-efficacious students share similar characteristics: they participate more readily, work harder, persist longer, and have fewer adverse emotional reactions when they encounter difficulties than do those who doubt their capabilities. This led Bandura to conclude that it is one thing for an individual to possess the necessary knowledge and skills to perform a task, and quite another to embody the self-beliefs in continuing with the task at hand while facing obstacles.

In light of the research, it is legitimate to infer that, in order to be motivated and successful in an online course, students should possess high self-efficacy for the content taught. However, if examined carefully, having adequate self-efficacy for course content might not be enough to succeed in an online course. Students with high self-efficacy for course content might not feel confident in learning in the online educational environment. Participation in online learning requires the extensive use of online technologies. To succeed in such courses, students should be able to use technologies to access course materials, send and receive email, browse the Internet, and perform searches to locate information. Students with limited or inadequate computer experiences or skills do not feel efficacious enough to participate in online learning and this can lead to computer anxiety (Loyd & Gressard, 1984). While students are experiencing computer anxiety, more effort is expended learning the media rather than the subject matter (Davie & Wells, 1991). Consequently, if an individual is to be efficacious about learning in an online course, he or she should possess two types of self-efficacy. One is self-efficacy for course content and the other is self-efficacy for online technologies. Online students should not only feel efficacious about the course content, but they should also feel efficacious in using online technologies.

Currently relatively few studies have been conducted to investigate self-efficacy and its relationship to satisfaction and performance when learning takes place in the online learning environment (Miltiadou, 2000; Wang & Newline, in press). And, results from those earlier studies concerning the effects of online technologies self-efficacy are inconclusive. Online technologies self-efficacy was negatively related to student performance in Miltiadou's (2000) study, whereas it was positively related in Wang and Newline's study (in press). In addition, those studies measured self-efficacy only one time - at the beginning of a semester. However, self-efficacy, especially self-efficacy with online technologies, may fluctuate during the course of a semester. Previous research on computer self-efficacy has indicated that positive past experience with computers increases computer self-efficacy beliefs while negative experience with computers lowers computer self-efficacy beliefs (Ertmer, Everbeck, Cennamo, & Lehman, 1994; Hill, Smith, & Mann, 1987; Torkzadeh & Koufteros, 1994). Similarly, in a web-based course, students' success or failure mastering online technologies contributes to the fluctuation of their efficacy expectation. Because self-efficacy regarding online technologies can fluctuate through the semester, measuring self-efficacy one time can reduce the accuracy of predicting the impact of self-efficacy on student learning.

Purpose of the Study

In an effort to provide an in-depth understanding of student's self-efficacy and its effects on student satisfaction and performance, this study examined (1) whether students' self-efficacy regarding course content and online technologies change throughout a semester; (2) whether self-efficacy for course content and online technologies are predictive of student satisfaction and performance. Specifically, answers to the following questions were sought:

1. Does a student's self-efficacy for course content change across a semester?
2. Does a student's self-efficacy for online technologies change across a semester?
3. Does self-efficacy of course content and online technologies serve as a significant predictor of student satisfaction and performance within a web-based course?

Methods

Participants

A total of sixteen students attending the University of Central Florida (UCF) at Orlando participated in this study. These students were enrolled in an undergraduate course, Introduction to Educational Technology (EME 2040). This course was offered through WebCT (WebCT is the course management tool used at the University of Central Florida).

Instruments

- Self-Efficacy Instrument

  The Self-Efficacy Instrument measures two components of self-efficacy beliefs – self-efficacy for course content and self-efficacy for online technologies. A total of 27, 5-point Likert-scaled items were developed. The first three items measuring course content self-efficacy were generated based on Eccles and Wigfield's (1995) 7-point Likert-scaled items. The last 24 items measuring online technologies self-efficacy were developed based on Miltiadou and Yu's (in

press) Online Technologies Self-efficacy Scale (OTSES). Each statement is preceded by the phrase "I feel confident..." For each item, students are asked to indicate their attitude from "Strongly Disagree", "Disagree", "Neural", "Agree", to "Strongly Agree."

The instrument was tested by a pilot study conducted with thirty-two students during Spring 2001. Reliability analysis (Cronbach's coefficient alpha) showed that the reliability was .87 for the first three items measuring content self-efficacy and .90 for the rest 24 items measuring online technologies self-efficacy.

- Student Satisfaction Instrument

  In this study, student satisfaction with the course was measured by an attitude questionnaire that was administered during the last week of Summer 2001. This satisfaction instrument consists of 19 items measuring students' self-r reported level of satisfaction with the online course. Specifically, the attitudes instrument measured students' self-reported level of satisfaction with the course materials, instructor, and the online technologies. For each item, students were asked to indicate their attitude from "Strongly Disagree", "Disagree", "Neural", "Agree", to "Strongly Agree." In a pilot study conducted with thirty-two students during Spring 2001, reliability analysis (Cronbach's coefficient alpha) indicated that the reliability was .93 for these 19 items in this instrument.

Procedures

Participating students were asked to take an online survey (Self-Efficacy Instrument) at four intervals during the course of the Summer 2001 semester. Every three weeks, students were asked to fill out an online survey measuring their course content self-efficacy and online technologies self-efficacy. Along with the fourth survey (the last survey), a satisfaction survey (Student Satisfaction Instrument) was administered to measure student's degree of satisfaction with this online course. In addition, with students' permission, their final course scores were obtained from their course instructor.

Two statistical analyses were employed in this study. First, a doubly multivariate repeated measures analysis of variance was used to examine whether self-efficacy for both course content and online learning technologies changed across a semester. Second, multiple linear regression was used to determine if course content self-efficacy and online technologies self-efficacy could predict satisfaction and performance.

Results and Discussion

The results of this study showed that there is a statistically significant change ($F_{6, 10} = 4.4$, $p = .02$) in self-efficacy for course content and self-efficacy for online technologies during the semester. Almost 73% (72.5%) of the change in combined self-efficacy can be accounted for by the time interval. Both self-efficacy for online technologies ($F_{3, 45} = 7.72$, $p < .01$) and self-efficacy for course content ($F_{3, 45} = 5.06$, $p < .01$) changed over time. Within subjects contrasts showed that self-efficacy for online technologies increased significantly ($F_{1, 15} = 5.64$, $p = .03$) during the first three weeks of the semester (between time 1 and time 2). Although the respondents' confidence level with online technologies increased after the second time, neither the increase from the second time to the third time nor the increase from the third time to the fourth time was statistically significant ($p<0.05$). On the other hand, within subjects contrasts using self-efficacy for course content showed a non-significant decrease ($p>.05$) from time 1 to time 2, a statistically significant increase from time 2 to time 3 ($F_{1, 15} = 5.4$, $p = .04$) and a statistically significant increase from time 3 to time 4 ($F_{1, 15} = 6.67$, $p = .02$). These results are displayed in Figures 1 and 2.

Figure 1
Self-Efficacy for Online Technologies

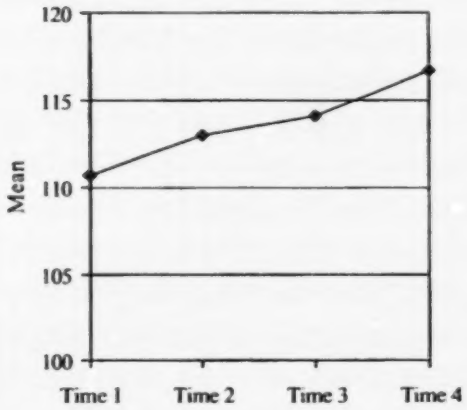
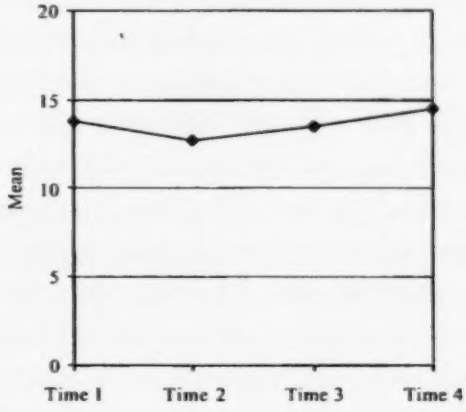


Figure 2
Self-Efficacy for Course Content



The results suggest that self-efficacy for both course content and online technologies is dynamic, indicating that self-efficacy is subject to change, even within a relatively short period of time (i.e. three weeks). A considerable change found in this study was the significant increase in student's level of self-efficacy for online technologies during the first three weeks of the semester. Commonsense dictates that, when students have more experience with online technologies, they feel more confident in using online technologies, and their self-efficacy increases, accordingly.

In predicting student's satisfaction with a course using the initial self-efficacy measurements, only course content self-efficacy was a statistically significant predictor ($t=2.77$, $p<.02$). This predictor alone accounted for 32% of the variance in satisfaction. When, however, a composite of self-efficacy for course content and self-efficacy for online technologies was used, the initial composite was a statistically significant ($R= .71$, $F_{2, 13}= 6.7$, $p= .01$) predictor of student satisfaction. The resulting equation, Satisfaction = -2.89 + .4 (Online Tech) + 3.49 (Course Content), indicated that as self-efficacy increased for either online technologies or course content there was a resulting increase in satisfaction. Although initial self-efficacy for online technologies was not a significant predictor of satisfaction, more than 50% of the variance in final course satisfaction could be explained by the initial composite of online technologies and course content self-efficacy. By the third time period, self-efficacy for online technologies was a statistically significant predictor of satisfaction but self-efficacy for course content was not ($R= .74$, $F_{2, 13}= 7.9$, $p< .01$). Overall, these results indicated that when these two types of self-efficacy were compounded, the possibility of predicting student satisfaction was increased. Consequently, we concluded that these two types of self-efficacy play substantial roles in predicting satisfaction.

Finally, the findings of this study showed that neither self-efficacy for course content nor self-efficacy for online technologies were statistically significant predictors of student performance until the fourth (last) time period. The resulting equation, Performance = 114.4 - .48 (Online Tech) + 2.99 (Course Content), indicated that as self-efficacy for online technologies increased, performance decreased; and as self-efficacy for course content increased, performance increased. The linear composite of self-efficacy for course content and for online technologies explained 40.1% of the variance in performance ($R= .63$, $F_{2, 13}= 4.4$, $p< .05$).

Contrary to previous studies (Miltiadou, 2001; Wang & Newlin, in press), this study showed that initial self-efficacy for course content and online technologies was not a statistically significant predictor of student performance. The absence of a relationship between initial self-efficacy and performance might be due to the small sample size. However, in the last time period, a relationship between self-efficacy for online technologies and performance did appear. It is noticeable that the relationship was negative, indicating that students who were not efficacious with online technologies perform better than those who were efficacious. This finding corresponds with Miltiadou's (2001) study. A possible explanation for this phenomenon is that when online technologies were perceived as difficult and students were not confident in learning via this media, they were more likely to be cognitively engaged. However, when online technologies were perceived as easy, students seemed to expend less effort. Consequently, those who were efficacious with online technologies earned lower grades than those who were not efficacious. This phenomenon also appeared in Salomon's (1984) study, where the students considered learning from watching television easier than learning from reaching printed text. These students exerted less effort, resulting in poor performance.

Although self-efficacy for online technologies was negatively related to performance, a positive relationship was found between self-efficacy for course content and performance. This was consistent with research findings from previous studies conducted in traditional classrooms as well as online courses where self-efficacy was positively related to student achievement (Bandura, 1997; Locke, Frederick, Lee, & Bobko, 1984; Miltiadou, 2000; Schunk, 1981; Nicholls & Miller, 1994; Pajares & Kranzler, 1995; Wang & Newlin, in press).

Conclusions and Suggestions for Further Research

With the growing popularity of online education and the urgent need to curb the online attrition rate, understanding and fostering online students' motivation is imperative. This study investigated self-efficacy, a critical element of motivation, and identified its effects on satisfaction and performance. Although the small sample size of this study limits its generalizability to the larger population, the findings of this study revealed some important points: (a) self-efficacy, both for course content and online technologies, changed over time in a web-based course, (b) the initial composite of self-efficacy for course content and online technologies was identified as a significant predictor of satisfaction, (c) the final measure of self-efficacy with online technologies was identified as a significant predictor of performance (with a negative coefficient), and (d) the final measure of self-efficacy with course content was identified as a significant predictor of performance.

Given the findings of this study, there appear to be several implications for researchers and instructors in the field of online education. First, this study showed that self-efficacy is dynamic and changeable within the course of a semester. However, in previous studies (Miltiadou, 2000; Wang & Newlin, in press), the dynamic nature of self-efficacy was often overlooked and was measured only one time in order to predict satisfaction and performance. This approach does not provide a comprehensive picture of self-efficacy and, accordingly, reduces the researcher's ability to explain the impact of self-efficacy on learning. In light of this, a genuine examination of the effect of self-efficacy on learning requires repeated measures of self-efficacy. When multiple measurement of self-efficacy is not feasible, it is imperative to specify the point in the semester when self-efficacy is measured.

Second, in past studies on self-efficacy, attention was predominately paid to efficacy expectation regarding the content learned, and yet participants' efficacy with learning tools or instruction delivery systems was often neglected. Nevertheless, in a web-based learning environment, participants' efficacy expectation with online technologies can no longer be ignored. As shown in this study, while predicting satisfaction and performance in a web-based course, participants' self-efficacy with online technologies was as critical as self-efficacy with course content. More attention should be paid to students' efficacy expectations while teaching or designing a web-based course.

BEST COPY AVAILABLE

Third, this study showed an unexpected finding regarding the negative relationship between self-efficacy with online technologies and performance. Students who were confident with online technologies appeared to erroneously overestimate their abilities to deal with learning tasks, and thus exert less mental effort, which led to poor performance. To avoid the pitfall of faulty assumptions, students should be informed that no matter how proficient they are with the online technologies, participating in online learning requires no less effort than traditional classes.

The limitation of this study comes from its small sample size. In order to generalize the findings of this study, it is recommended that this study be replicated with a larger sample and with different types of classes in different academic settings (i.e. high schools, community colleges, and universities). In addition, the negative relationship between self-efficacy with online technologies and performance should be further explored. It is suggested that further studies look at whether students who are confident with online technologies do exert less mental effort in their online learning activities. This could unveil the mechanism that contributes to the negative relationship between online technologies self-efficacy and performance. Other studies could look at other possible predictors of student satisfaction and performance, such as task value, which has been identified as a significant predictor of both student learning achievement and satisfaction in traditional classes (Hammann & Stevens, 1998; Townsend & Hicks, 1995; Velayo & McKeachie, 1994). These findings could shed additional light into the prediction of student achievement and satisfaction in web-based courses.

References

Atman, K. S., Egan, W. M., Sebastian, J., Welch, M., & Page, B. (1991). Identifying performance improvement prescriptions for distance learning and teaching: Quantitative and qualitative approaches. (ERIC Document Reproduction Service No. ED 371 751).

Bandura, A. (1982). Self-efficacy mechanism in human agency. American Psychologist, 37(2), 122-147.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman.

Bandura, A., Adams, N. E., & Beyer, J. (1977). Cognitive processes mediating behavioral change. Journal of Personality and Social Psychology, 35,125-139.

Baynton, M. (1992). Dimensions of control in distance education: A factor analysis. The American Journal of Distance Education, 6(2), 17-31.

Betz, N. E., & Hackett, G. (1981). The relationships of career-related self-efficacy expectations to perceived career options in college women and men. Journal of Counseling Psychology, 28, 399-410.

Brown, I. Jr., & Inouye, D. K. (1978). Learned helplessness through modeling: The role of perceived similarity in competence. Journal of Personality and Social Psychology, 36, 900-908.

Coggins, C. C. (1988). Preferred leaning styles and their impact on completion of external degree programs. The American Journal of Distance Education, 2(1), 25-37.

Cropley, A. J., & Kahl, T. N. (1983). Distance education and distance learning: some psychological considerations. Distance Education, 4, 27-39.

CyberAtlas (2000). The Web Marketer's Guide to Online Facts [Online]. Available: http://cyberatlas.internet.com/big_picture/demographics/article/0,1323,5911_326181,00.html [Accessed September 22].

Davie, L. E., & Wells, R. (1991). Empowering the learner through computer-mediated communication. The American Journal of Distance Education, 5(1), 15-23.

Dille, B., & Mezack, M. (1991). Identifying predictors of high risk among community college telecourse students. The American journal of distance education, 5(1), 24-35.

Eccles, J., & Wigfield, A. (1995). In the mind of the actor: The structure of adolescents' achievement task values and expectancy-related beliefs. Personality and Social Psychology Bulletin, 21, 215-225.

Eisenberg, E., & Dowsett, T. (1990). Student drop-out from a distance education project course: A new method of analysis. Distance education, 11(2), 231-253.

Ertmer, P. A., Everbeck, E., Cennamo, K. S., & Lehman, J. D (1994). Enhancing self- efficacy for computer technologies through the use of positive classroom experiences. Educational Technology, Research & Development, 42(3), 45-62.

Fjortoft, N. F. (1995). Predicting persistence in distance learning programs. (ERIC Document Reproduction Service No. ED 387 620).

Frew, E. A., & Weber, K. (1995, June). Towards a higher retention rate among distance learners. Open learning, 10(2), 58-61.

Garland, M. R. (1993). Student perceptions of the situational, institutional, dispositional and epistemological barriers to persistence. Distance Education, 14(2), 181-198.

Hammann, L. A., & Stevens, R. J. (1998). Metacognitive awareness assessment in self-regulated learning and performance measures in an introductory educational psychology course. (ERIC Document Reproduction Service No. ED 424 249)

Hill, T., Smith, N. D., & Mann, M. F. (1987). Role of efficacy expectations in predicting the decision to use advanced technologies: The case of computers. Journal Of Applied Psychology, 72(2), 307-313.

International WHERE + HOW (2001). The International Distance Learning Course Finder. [Online]. Available:http://www.dlcoursefinder.com/US/index.htm [Accessed September 22].

I psos-Reid (2001). The Little Internet Fact Book. [Online]. Available: http://www.angusreid.com/pdf/products/net_book.pdf [Accessed September 22].

Keegan, D. (1986). The foundations of distance education. London: Croom Helm.

BEST COPY AVAILABLE

Keller, J. M. (1999). Motivation in cyber learning environments. International Journal of Educational Technology, 1, 7-30.

Locke, E. A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals, and task strategies on task performance. Journal of Applied Psychology, 69, 241-251.

Loyd, B. H., & Gressard, C. (1984). The effects of sex, age, and computer experience on computer attitudes. AEDS Journal, 18(2), 67-77.

Miltiadou, M. (2000). Motivational constructs as predictors of success in the online classroom. Unpublished doctoral dissertation, Arizona State University, Tempe.

Miltiadou, M., & Yu, C. H. (in press). Validation of the Online Technologies Self-efficacy Scale (OTSES). International Journal of Educational Telecommunications.

Moore, M. G., & Kearsley, G. (1996). Distance education. Wadsworth Publishing Company.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. Journal of Counseling Psychology, 18, 30-38.

Parker, A. (1995). Distance education attrition. International journal of educational telecommunications, 1(4), 389-406.

Pugliese, R. R. (1994). Telecourse persistence and psychological variables. American journal of distance education, 8(3), 22-39.

Salomon, G. (1984). Television is "easy" and print is "tough": The differential investment of mental effort in learning as a function of perceptions and attributions. Journal of Educational Psychology, 76, 647-658.

Schunk, D. H. (1981). Modeling and attributional feedback effects on children's achievement: A self-efficacy analysis. Journal of Educational Psychology, 74, 93-105.

Stumpf, S. A., Brief, A. P., & Hartman, K (1987). Self-efficacy expectations and coping with career-related events. Journal of Vocational Behavior, 31, 91-108.

Torkzadeh, G., & Koufterous, X. (1994). Factorial validity of a computer self-efficacy scale and the impact of computer training. Education and Psychological Measurement, 54(3), 813-821.

Townsend, M. A. R., & Hicks, L. (1995). Classroom goal structures, social satisfaction and the perceived value of academic tasks. (ERIC Document Reproduction Service No. ED 387 762)

Velayo, R. S., & McKeachie, W. (1994). Learner cognitive motivational characteristics and perceptions of computer conferencing use. International Journal of Instructional Media, 21, 279-293.

Wang, A. Y., & Newlin, M. H. (in press). Predictors of web-student performance: The role of self-efficacy and reasons for taking an online class. Manuscript accepted for publication by Computers in Human Behavior.

Zajkowski, M. E. (1993, October). Business students learning at a distance: One form of pre-enrolment counseling and its effect on retention. Distance education, 14(2), 331-353.

BEST COPY AVAILABLE

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

[X] This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.

[ ] This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").